National Aeronautics and Space Administration

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Results of Off-site Sampling in Plum Brook

NASA has completed taking and analyzing more than 1,200 sediment samples from areas along Plum Brook. Samples were taken in a 1.5-mile area, from the NASA Plum Brook Station fence line to U.S. 250. Sample collection was completed in late March and analysis finished in early April. **Results of this comprehensive effort show that none of the levels pose any health concerns to area residents, including small children or workers.** NASA shared the results with neighbors whose properties were sampled, as well as with the U.S. Nuclear Regulatory Commission (NRC), the Ohio Department of Health (ODH), and other state and county agencies.

NASA began the extensive sampling effort in November 2005. For tracking purposes, NASA broke up Plum Brook into four sections (A-D). Section A extended from the NASA Plum Brook Station (PBS) fence line to Clark Road; Section B from Clark to the former NASA sewage treatment plant; Section C from the treatment plant to Bogart Road; and Section D from Bogart to U.S. 250. Of the more than 1,200 samples collected, the average reading was below 3 picocuries per gram. A picocurie is one trillionth of a curie, which measures radioactivity in terms of energy (or disintegration) given off per minute.

There were a few areas with elevated readings of one specific isotope – Cesium 137 – above 12 picocuries per gram, with the highest of 50 picocuries found in the area between the NASA fence line and Clark Road, an area about 1,800 feet long. Two of the samples were at 38 picocuries, and a few were in the 20's. While cleanup levels for Plum Brook have not been established, 12 picocuries is the proposed Cesium cleanup level for the reactor site. These elevated areas were generally surrounded by other areas that were either just slightly above, or right at levels that are normal background for this part of northern Ohio. Again, none of the levels pose any concern to public health. Nothing was present in the surface water of Plum Brook.

NASA took 747 random samples and 367 targeted samples. Another group of samples was "spilt" for analysis by outside laboratories contracted by NASA to perform independent quality control. In addition, split samples were taken for analysis by NRC and ODH labs. Random samples were based on a predetermined geographic distribution, where we laid out a grid of the entire area to be sampled and then collected samples every 25 feet, with every other one on the center line of the stream, and with alternating samples to the right or left of the center line samples. Targeted samples were taken in areas where we found elevated readings. NASA used very sensitive instruments to identify the presence of any radioactivity above 6 picocuries per gram. The results of all samples – those analyzed by NASA and those "split" with other agencies – were consistent. As was noted above, the average reading per sample was less than 3 picocuries per gram.

Results of this comprehensive sampling are consistent with the more limited sampling done last fall from Pentolite Ditch to Bogart Road. Those results showed some areas where there was Cesium above background levels, but they posed no health concerns. After a thorough review of records, NASA confirmed that the Cesium had resulted from a pinhole fuel leak at the Reactor Facility that was first detected in 1968. The leak was located and corrected in 1969. ■

Next Steps

The results of all our sampling data are currently being reviewed by the NRC and ODH, and NASA will continue working with them to determine the next appropriate step in dealing with Plum Brook. What we have found is that in some areas where NASA removed a sample, the act of digging served to remove the contamination, indicating that spot cleanup may be sufficient in some places (if the NRC and ODH concur) while no cleanup may be required in others. One of the goals of NASA's sampling plan has been to determine how far downstream the Cesium has gone. Between Bogart Road and U.S. 250, we found little contamination, and only three elevated readings out of 90 samples in a 900-foot-long section. Since we did find those elevated readings, NASA decided to continue sampling, and we are currently in the process of taking additional samples from an area extending from U.S. 250 to Route 2. We are also working with a local hydrogeologist to better understand how material may have moved down Plum Brook over time, so we can then make sure we fully identify any other specific areas further downstream where sampling may be warranted.

NASA will continue to update residents who abut Plum Brook, and the general public, about any next steps, via the Decommissioning Project Website (www.grc.nasa.gov/WWW/pbrf) and on the project's Telephone Information Line (1-800-260-3838). ■

For more information

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